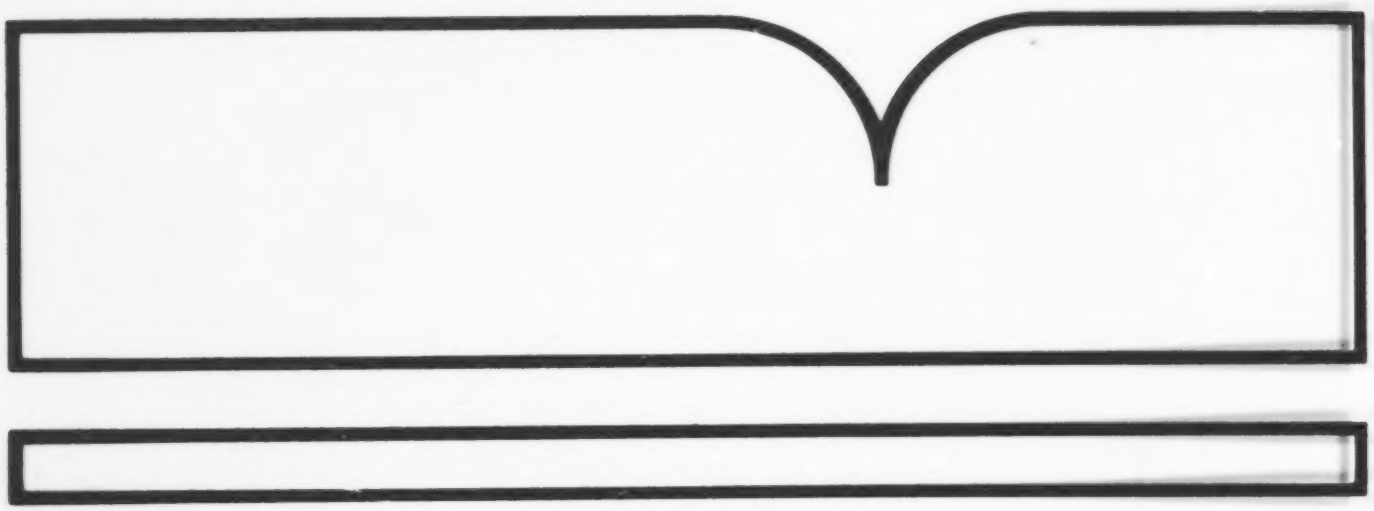
PB90-234667

Final Response to BDAT Related Comments Document Volume 1-Q

(U.S.) Environmental Protection Agency, Washington, DC

May 90



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This response to comments document only addresses those comments which were submitted on the proposed land disposal restrictions for those waste codes and general BDAT technologies and issues which relate to Third Third Wastes Treatment Standards.

The commenters presented in this document are grouped according to major concerns of the commenters.

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FINAL
RESPONSE TO BDAT RELATED COMMENTS DOCUMENT

Gases

VOLUME I-Q

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May 1990

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INTRODUCTION

This response to comments document only addresses those comments which were submitted on the proposed land disposal restrictions for those waste codes and general BDAT technologies and issues which relate to Third Third Wastes Treatment Standards.

The commenters presented in this document are grouped according to major concerns of the commenters. This document is comprised of the following sections:

ISSUE CODE 1: General BDAT Aspects
ISSUE CODE 2: D001 - Characteristic Ignitable Wastes
ISSUE CODE 3: D002 - Characteristic Corrosive Wastes
ISSUE CODE 4: D003 - Characteristic Reactive Wastes and P and U Wastes Containing Reactive Listing Constituents
ISSUE CODE 5: D004/D010 - Characteristic Wastes for Arsenic and Selenium and K, P, and U Wastes Containing Arsenic and Selenium
ISSUE CODE 6: D005 - Characteristic Wastes for Barium and P013
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ISSUE CODE 8: D007 - Characteristic Wastes for Chromium
ISSUE CODE 9: D008 - Characteristic Wastes for Lead P and U Wastes Containing Lead
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ISSUE CODE 11: K044, K045, K047: Wastes from the Manufacturing and Processing of Explosives
ISSUE CODE 12: D011 - Characteristic Wastes for Silver
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ISSUE CODE 25: K015 - Still Bottoms from Benzal Chloride

ISSUE CODE 26: K021 - Spent Antimony Catalyst.

(No Comments Were Received for this Waste Code)

ISSUE CODE 27: K046 - WW Treatment Sludges from Manufacturing, Formulating, and Loading of Lead-Based Initiating Compounds

ISSUE CODE 28: K060 - Ammonia Still Lime Sludge.

(No Comments Were Received for this Waste Code)

ISSUE CODE 29: K061 - Electric Arc Furnace Dust

ISSUE CODE 30: K069 - Emission Control Dust/Sludge from Secondary Lead Smelting

ISSUE CODE 31: K071, K106 - Mercury Cell Process Wastes

ISSUE CODE-32: K073 - Chlorinated Hydrocarbon Wastes.

(No Comments Were Received for this Waste Code)

ISSUE CODE 33: K086 - Residues from Ink Formulation

ISSUE CODE 34: K100 - Waste Leaching Solution from Acid Leaching of Emission Control Dust/Sludge from Secondary Lead Smelting

(No Comments Were Received for this Waste Code)

ISSUE CODE 35: Wastes Containing Cyanide

ISSUE CODE 36: K017 - Wastes from the production of Epichlorohydrin

(No Comments Were Received for this Waste Code)

ISSUE CODE 37: K028,K029, K095, K096 - Production of 1,1,1-Trichloroethane

ISSUE CODE 38: Wastewaters containing BDAT Constituents

ISSUE CODE 39: K022 - Wastes from the Production of Phenol/Acetone

ISSUE CODE 40: K025 - Distillation Bottoms from the Production of Nitrobenzene

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ISSUE CODE 42: K026 - Stripping Still Tails from the Production of Methyl Ethyl Pyridine

(No Comments Were Received for this Waste Code)

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(No Comments Were Received for this Waste Code)

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(No Comments Were Received for this Waste Code)

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Commenters are identified by both commenter number and commenter name. Comments within each section of this document have been assigned a sequential comment number.

Issues were obtained from the original comment submittal and were categorized based on the grouping specified above. The Agency's response to each comment follows immediately after the text of the document. For responses related to capacity issues, the reader should review the "Response to Comments Background Document for the Third Third Land Disposal Restrictions Proposed Rule, November 22, 1989. Volume II Capacity Related Comments." For information regarding broad policy questions, the reader is directed to the "Response to Comments Background Document for the Third Third Land Disposal Restrictions Proposed Rule, November 22, 1989. Volume III Policy Related Comments."

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No Comments Were Received for this Waste Code

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No Comments Were Received for this Waste Code

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Comment Number: 52-A-1

Docket Number: LDI2-00080

Commenter: PHILLIPS PETROLEUM COMPANY

Issue: Gases

Subissue: Thermal and Caustic Solution Destruction as Alternatives to Gas Cylinder Recovery

Comment:

PROPOSED TREATMENT METHODS FOR CERTAIN U AND P WASTES

Phillips believes that it is inappropriate to establish recovery as the only acceptable treatment method for selected U and P wastes. For example, Phillips' research and development operations generate very small quantities of Nickel Carbonyl (P073), Nitrogen Dioxide (P078), and Ethyene Oxide (U115) for which recovery is the only specified treatment technology in the proposed rules. It is Phillips current practice to dispose of these compounds by oxidation, either thermally in an incinerator, or chemically in a laboratory scale treatment facility. Given the very small quantity of these wastes generated, (typically less than two pounds per year) recovery is technically questionable and economically unjustifiable. Due to the highly reactive nature of these chemicals, their long-term storage in order to obtain quantities sufficient to justify recovery either on-site or off-site would present a significant safety hazard. Consequently, the immediate oxidation and stabilization by either thermal or chemical means is the only safe, economical, and environmentally sound treatment method for small quantities of these highly reactive compounds. The final rules must be revised to allow for the chemical and thermal oxidation of these compounds, in addition to recovery, especially for generators of small quantities (<50 pounds per year).

Comment Number: 52-A-1

Docket Number: LD12 - 00080

Commenter: Phillips Petroleum Company

Issue: Gases

Subissue: Thermal and Caustic Solution Destruction as Alternatives to Gas Cylinder Recovery

Response:

The commenter believes that establishing recovery as the only acceptable treatment method for gaseous U and P wastes, such as P078 (nitrogen dioxide) and U115 (ethylene oxide), is inappropriate because recovery is unsafe, uneconomical, and environmentally unsound. The commenter recommends that the final rule be revised to allow for the chemical and thermal oxidation of these compounds in addition to recovery.

EPA agrees with the commenter that recovery is inappropriate as the only acceptable treatment method for gaseous U and P wastes. Promulgated BDAT treatment standards as methods of treatment for U115 are being revised to chemical oxidation or thermal oxidation (incineration) for nonwastewaters, and thermal oxidation (incineration), chemical oxidation followed by carbon adsorption, or wet air oxidation followed by carbon adsorption for wastewaters. The development of these treatment standards is discussed in Volume E of the U & P Wastes and Multi-Source Leachates background document.

P078, however, is not amenable to treatment by oxidation, since the resulting product is the undesirable NOx equilibrium mixture. Instead, EPA is promulgating as the BDAT treatment standards as a method of treatment for P078 (and P076 - nitric oxide) nonwastewaters and wastewaters: contact with a caustic reducing solution. The development of this treatment standard is also discussed in Volume E of the U & P Wastes and Multi-Source Leachates background document.

The promulgation of BDAT treatment standards as methods of treatment, however, does not preclude a facility from utilizing recovery (recycle or reuse) operations in accordance with 40 CFR 261.

Comment Number: 52-A-2

Docket Number: LD12-00115

Commenter: AQUA-TECH - GROCE LABORATORIES

Issue: Gases

Subissue: Thermal and Caustic Solution Destruction as Alternatives to Gas Cylinder Recovery

Comment:

Under III A. 6. m Gases, these rules propose recovery as treatment for the following gases: nitric oxide, nitrogen dioxide, and ethyline oxide.

Again, as discussed previously, manufacturers will not accept damaged cylinders or cylinders unable to be recycled and recertified. At this point, these become waste and enter the regulated arena. Example: attached to these comments are Matheson's and Linde's specification sheets for ethylene oxide. Please note under "Caution", that cylinders over 90 days "may not be returned". This particular gas can polymerize resulting in an explosion. The gaseous form of ethylene oxide may explode even in the absence of air or oxygen. It has one of the broader flammable ranges possible (3-100%). The hazards of handling and storage are multiplied with age and any contamination. Our treatment method recognizes this potential explosive nature by use of controlled detonation/deflagration. Detonation is a rapid reaction which causes thermal destruction of the gas. Such activities are conducted in a remote, permitted and restricted area. Any residues from this process can be landfilled at MTR units.

Nitric oxide (P076) can be treated effectively by vending the gas, along with oxygen, into a caustic solution with an appropriate concentration of a weak reducing agent such a ferrous sulfate or sodium sulfite. The caustic solution will neutralize any corrosivity that results from hydrolysis, yielding a nitrate or nitrite. The reducing agent is added to offset the oxidizing potential of nitric oxide and any nitrogen dioxide that results from the conversion of nitric oxide to nitrogen dioxide by reaction with oxygen at room temperature. The pH of the resulting solution can be easily adjusted and further treated by waste water treatment operations prior to landfill. The effectiveness of the treatment can be readily monitored by oxidation reduction indicators. Tests for remaining oxidation potential can be conducted to ensure nearly complete conversion. The indicators chosen, as well as the tests for residual oxidation potential, will depend largely on the reducing agents and type of caustic solution chosen.

The problem with recovery being the BDAT for nitric oxide is that recovery itself poses a far greater threat to the health and safety of handling personnel at generator(s) facilities due to the ability of nitric oxide to readily react with oxygen, even at room temperature, to become deadly nitrogen dioxide, which is a Class A Poison. The potent toxicity of nitrogen dioxide and its potentially lethal affects are well documented by scientific and medical publications. Recovery would encourage generator(s) to store cylinders of this waste until significant quantities are accumulated to facilitate recovery, which is the generator's right under the storage prohibition of land restricted material rules set forth in

cont.

Comment Number: 52-A-2

Docket Number: LD12-00115

Commenter: AQUA-TECH - GROCE LABORATORIES (continued)

Issue: Gases

Subissue: Thermal and Caustic Solution Destruction as Alternatives to Gas Cylinder Recovery

Comment:

previous rule makings. This action alone may easily result in loss of life due to the increased probability of undetected leaks of the gas, which could readily accumulate to the lethal level (of coverted nitric oxide to nitrogen dioxide). An additional hazard is that symptoms of acute toxicity may be delayed for 24 hours, causing diagnosis and treatment to be delayed or be too late for the person(s) affected. Other important hazards, such as fires and explosions, from the strong oxidizing ability of nitric oxide could result in greater losses of life, and property.

We believe that even though recovery of these gases would be useful both economically and environmentally, the hazards associated with storage for recovery of this gas at the generators' site(s) poses far greater threats and risks to the health and safety of employees and the proximal public. Therefore, we propose that chemical treatment by reduction and neutralization be promulgated as the BDAT for nitric oxide because these treatments can remove the hazards of this waste.

Nitrogen dioxide (P078) requires treatment by reacting with caustic such as the second step with nitric oxide.

We request that the proposed rules recognize these treatment methods as another alternative to recovery.

cont.

Comment Number: 52-A-2

Docket Number: LD12-00115

Commenter: AQUA-TECH - GROCE LABORATORIES (continued)

Issue: Gases

Subissue: Thermal and Caustic Solution Destruction as Alternatives to Gas Cylinder Recovery

Comment:

MATHESON

Ethylene Oxide
99.7% min.*

Cylinder Size	Contents lbs.	Contents kg.
4 L.B.	3 ½	1.36 0.227

EQUIPMENT RECOMMENDATIONS

Description	Model Number	Delivery Press. Range (psig)	(kPa)	See Page
Manual Control	61-510			140
L.B. Control	325			151
Detector Tubes				202

CAUTION

Ethylene Oxide may polymerize on prolonged storage. We recommend using the product within 90 days of the filling date indicated on our tag. Refrigerated storage will prolong shelf life. Cylinder deposits may not be returned if cylinders contain polymer and have been [illegible] than 90 days.

GAS DATA

C_2H_4O	MW 44.05
Cylinder Pressure	7.3 psig @ 70°F (50 kPa @ 21°C)
Specific Volume	9.09 ft³/lb. (0.568 m³/kg)
Cylinder Color Marking	Orange
Cylinder Valve Outlet	All sizes except L.B. — CGA No. 510
	L.B. — CGA No. 110
Hazard Class	Flammable Liquid Label Flammable Liquid
CAS Registry No. 75-21-8	I.D. No. UN 1040

cont.

Comment Number: 52-A-2

Docket Number: LD12-00115

Commenter: AQUA - TECH - GROCE LABORATORIES

Issue: Gases

Subissue: Thermal and Caustic Solution Destruction as Alternatives to Gas Cylinder Recovery

Comment:

LINDE

PURE GASE

	Cylinder Size	Contents	Pressure	Gross Wt.	Price	Recommended Regulator or Valve	Model or Material	Refer Sec. Page
ETHYLENE OXIDE ③ (UN1040) (CAS No. 75-21-8)								

C_2H_4O—A colorless, flammable, toxic liquefied gas. Odor not detectable until well above permissible expos limit. Exposures to low concentrations may cause delayed symptoms. This product generally should not be sto for more than 120 days.

Major Hazards: Fire and Inhalation
Exposure Limit: T.L.V. of 1 ppm. (ACGIH 1984-85)
Fire Potential: 3.0%-100% Flammable Range
Odor: Nonresidual ether-like odor above approximate 500 ppm
Mol. Wt.: 44.05
MSDS L-4798

Sp. Gr. (Air = 1) 70°F (21°C): 1.52
Critical Temperature: 384.4°F (196°abs)
Critical Pressure: 1043 psia (73.3 kg/cm²abs)
Specific Volume: 8.43 ft³/lb (0.52 m³/kg)
DOT Name: Ethylene Oxide
DOT Label: Flammable Liquid
DOT Class.: Flammable Liquid

Minimum purity 99.7% (liquid phase)
CGA 510

DRUM*	400 lb 181.8 kg	50 psig 3.5 kg/cm²	660 lb 300.0 kg	$ P.O.R.	Manual Control Valve	SI SII	50
EOX*	175 lb 79.5 kg	50 psig 3.5 kg/cm²	250 lb 113.6 kg	$ P.O.R.			
FE*	15 lb 6.82 kg	50 psig 3.5 kg/cm²	35 lb 15.9 kg	$ P.O.R.			

*Pressurized with nitrogen to 50 psig. Equipped with straight eductor tube. P.O.R. Price on request.

Comment Number: 52-A-2

Docket Number: LD12 - 00115

Commenter: Aqua-Tech - Groce Laboratories

Issue: Gases

Subissue: Thermal and Caustic Solution Destruction as Alternatives to Gas Cylinder Recovery

Response:

The commenter believes that establishing recovery as the only acceptable treatment method for gaseous U and P wastes, such as P076 (nitric oxide), P078 (nitrogen dioxide) and U115 (ethylene oxide), is inappropriate because recovery is unsafe, uneconomical, and environmentally unsound. The commenter recommends that the final rule be revised to allow for treatment of ethylene oxide by use of controlled detonation/deflagration and treatment of P076 and P078 by contact with a caustic reducing solution, in addition to recovery.

EPA agrees with the commenter that recovery is inappropriate as the only acceptable treatment method for gaseous U and P wastes. EPA further agrees with the commenter's suggested treatment method for P076 and P078 of contacting these wastes with a caustic reducing solution. Indeed, the BDAT treatment standards for P076 and P078 nonwastewaters and wastewaters have been revised to be contact with a caustic reducing solution. The development of this treatment standard is discussed in Volume E of the U & P Wastes and Multi-Source Leachates background document.

For U115, the Agency does not view controlled detonation/deflagration as an acceptable BDAT treatment standard. Instead, promulgated BDAT treatment standards for U115 are being revised to chemical oxidation or thermal oxidation (incineration) for nonwastewaters, and thermal oxidation, chemical oxidation followed by carbon adsorption, or wet air oxidation followed by carbon adsorption for wastewaters. The development of these treatment standards is also discussed in Volume E of the U & P Wastes and Multi-Source Leachates background document.

The promulgation of BDAT treatment standards as methods of treatment, however, does not preclude a facility from utilizing recovery (recycle or reuse) operations in accordance with 40 CFR 261.

Comment Number: 52-B-1

Docket Number: LD12-00129

Commenter: OLIN CHEMICALS

Issue: Gases

Subissue: Numerical Standards for Gaseous Wastes in Nongaseous Forms

Comment:

Gases (III.A.6.m)

The Agency fails to take into account that these materials, and specifically Ethylene Oxide, are used in industry in the liquid state. A spill would not immediately "flash" to vapor but could contaminate the soil or water it comes in contact with. The USEPA's statement in the preamble "...that it is unlikely that these wastes could not exist as spill residues..." contradicts the Agencies interpretation of the "derived from" rule. If these spill residues are hazardous under "derived from" then "Recovery as a Method of Treatment" is not a viable or even technically feasible option. If the residues are non-hazardous, is the Agency redefining the "derived from" rule?

Olin concurs with USEPA that these wastes can exist as wastewaters (spill residues, scrubber effluents) and that a treatment concentration standard based upon incineration or carbon absorption should be established.

Comment Number: 52-B-1

Docket Number: LD12 - 00129

Commenter: Olin Chemicals

Issue: Gases

Subissue: Numerical Standards for Gas Wastes in Nongaseous Forms

Response:

The commenter points out that U115 (ethylene oxide) and other gaseous U and P wastes are used in industry in the liquid state. As such, there may be nonwastewater forms of these wastes, such as spill residues, which would not be amenable to recovery. In addition, the commenter requests that EPA should establish concentration-based treatment standards for gaseous U and P wastewater constituents, and that the standards be based on incineration or carbon adsorption.

EPA agrees with the commenter that, due to the possible generation of nonwastewater forms of U115, such as spill residues, recovery is inappropriate as the only acceptable treatment method for gaseous U and P wastes. EPA also agrees with the commenter that treatment standards for U115 wastewaters need to be established. Promulgated BDAT treatment standards for U115 are being revised to chemical oxidation or thermal oxidation (incineration) for nonwastewaters, and thermal oxidation, chemical oxidation followed by carbon adsorption, or wet air oxidation followed by carbon adsorption for wastewaters. The development of these treatment standards is discussed in Volume E of the U & P Wastes and Multi-Source Leachates background document. Due to the variable nature of these wastes, and because EPA has very little characterization and treatability data on these wastes, methods of treatment are being promulgated as BDAT treatment standards instead of concentration-based standards.

The promulgation of BDAT treatment standards as methods of treatment, however, does not preclude a facility from utilizing recovery (recycle or reuse) operations in accordance with 40 CFR 261.

Comment Number: 52-B-2

Docket Number: LDI2-00190

Commenter: UNION CARBIDE CHEMICALS AND PLASTICS COMPANY INC.

Issue: Gases

Subissue: Numerical Standards for Gas Wastes in Nongaseous Forms

Comment:

12) EPA Should Use Existing Data To Develop BDAT For U-115 (Ethylene Oxide) - The Agency has proposed (page 48459) that recycling be the treatment standard for gases, including ethylene oxide. EPA's rational is that these commercial chemical products are gases and industry normally recycles such materials back to the process. While UCC agrees that most of these materials are recycled, we are concerned about the inability to recycle two different types of wastes that may be generated.

The first type of waste is wastewater contaminated with U-115. This could be generated by washing our tanks that contained commercial product ethylene oxide, or by operation of a firewater deluge system. The latter scenario may be quite likely, since most facilities that handle ethylene oxide (EO) would immediately trigger the firewater system, to knock down any vapor clouds of EO. The resulting firewater would, based on our understanding of the regulations, carry the hazardous waste code U-115. UCC has attached to this submission a copy of a soft-hammer certification, previously submitted to OSW, which indicated that treatment via sorption of EO can achieve levels below the detection limit in wastewater streams. UCC believes that this data should be used to establish a BDAT standard for U-115 which would require treatment of wastewaters down to the detection limit of ethylene oxide. EPA should not specify a treatment technology, because other means, such as caustic treatment, may also allow this

cont.

Comment Number: 52-B-2

Docket Number: LDR2-00190

Commenter: UNION CARBIDE CHEMICALS AND PLASTICS COMPANY, INC. (continued)

Issue: Gases

Subissue: Numerical Standards for Gas Wastes in Nongaseous Forms

Comment:

level to be achieved.

The second type of waste is EO contaminated solids, such as soil or debris from a cleanup of an EO spill, or incidental solids, such as process vessel residues generated during routine cleaning activities. UCC submitted a certification to EPA on 2/27/89, indicating that incineration was a viable treatment technology for this type of waste. In our case the waste contained up to 10 ppm of ethylene oxide. We believe that incineration is an appropriate form of treatment for such wastes. As noted above, there may also be other treatment methods, such as caustic addition, that may also achieve that same concentrations of EO in the waste. UCC urges EPA to set a BDAT treatment concentration, and let the regulated community determine the most appropriate treatment technology.

Comment Number: 52-B-2

Docket Number: LD12 - 00190

Commenter: Union Carbide Chemicals and Plastics Company Inc.

Issue: Gases

Subissue: Numerical Standards for Gas Wastes in Nongaseous Forms

Response:

The commenter believes that establishing recovery as the only acceptable treatment method for gaseous U and P wastes, such as U115 (ethylene oxide), is inappropriate because of the possibility that the waste will be generated as a nonwastewater or a wastewater. The commenter urges EPA to promulgate concentration-based BDAT treatment standards for U115 nonwastewaters and wastewaters, instead of methods of treatment.

EPA agrees with the commenter that, due to the possible generation of nonwastewater and wastewater forms of U115, such as spill residues and tank wash water, recovery is inappropriate as the only acceptable treatment method for gaseous U and P wastes. Promulgated BDAT treatment standards as methods of treatment for U115 are being revised to chemical oxidation or thermal oxidation (incineration) for nonwastewaters, and thermal oxidation (incineration), chemical oxidation followed by carbon adsorption, or wet air oxidation followed by carbon adsorption for wastewaters. The development of these treatment standards is discussed in Volume E of the U & P Wastes and Multi-Source Leachates background document. Due to the variable nature of these wastes, and because EPA has very little characterization and treatability data on these wastes, methods of treatment are being promulgated as BDAT treatment standards instead of concentration-based standards. EPA cannot establish concentration-based treatment standards for these wastes due to the lack of treatment data on which to base standards.

The promulgation of BDAT treatment standards as methods of treatment, however, does not preclude a facility from utilizing recovery (recycle or reuse) operations in accordance with 40 CFR 261.

Comment Number: 52-B-3

Docket Number: LD12-00190.A-H

Commenter: Union Carbide Corporation

Issue: Gases

Subissue: Numerical Standards for Gas Wastes in Nongaseous Forms

Comment: Data Submittal

2/2

LD12-00190.A

UNION CARBIDE CORPORATION 39 OLD RIDGEBURY ROAD, DANBURY CT 06817-0001
INDUSTRIAL CHEMICALS DIVISION

October 20, 1989

Mr. Larry Rosengrant
U.S. EPA - 05-322
401 M St., SW
Washington, DC 20460

RE: Data on Treatment of Ethylene Oxide (U-115)

Dear Mr. Rosengrant:

Enclosed please find two submissions previously filed with U. S. EPA, Region III, describing [redacted] treatment of [redacted]. We recommend your consideration of this information as you develop BDAT standards for these types of wastes.

Although not included in this packaged, I believe we may also have some older information regarding the treatment of ethylene oxide with caustic. This is a well-known treatment technology, and we hope to provide you with information on this option for the public record as quickly as possible.

The data in the November 2, 1988 submittal, demonstrated an ethylene oxide concentration of less than 0.5 ppm after nitrogen purging to a flare. As we discussed, incineration is a logical treatment technology for ethylene oxide contaminated solids, although "non-detect" levels may also be achievable via other technologies, such as caustic treatment of small volumes of contaminated soil.

We are unaware of any waste streams that are routinely generated which would carry the designation of U-115. I suspect that the majority of any such wastes are from spill cleanup of ethylene oxide, maintenance activities, and possibly from emergency response actions during a release.

Please contact me at 203-794-3024 if I can be of further assistance.

Sincerely,

J. K. Petros
Manager of Health, Safety and Environmental Affairs
Industrial Chemicals Division

RECEIVED
OCT 2 1989
R. J. ROMAGNOLI

JKP/tb/269
Att.

3/12
LD12-00190.B

UNION CARBIDE

P. O. BOX 2831, CHARLESTON, W. VA. 25330
Institute Plant

November 2, 1988

CERTIFIED MAIL

Mr. James M. Seif
Regional Administrator
EPA Region III
841 Chestnut Street
Philadelphia, Pennsylvania 19107

Dear Mr. Seif:

Attached is a second copy of the demonstration and certification that was submitted to you October 31, 1988 by Union Carbide Corporation. This second copy is being submitted because I discovered that the attachment was incomplete. As stated in Mr. C. H. Hancock's October 31, 1988 letter, this demonstration and certification documents that a hazardous waste recently generated by Union Carbide Corporation, which is otherwise prohibited from land disposal under 40 CFR Section 268.33(f), has been treated by the practically available technology which yields the greatest environmental benefit prior to land disposal in a surface impoundment.

Please call me on (304) 747-1856 if you have any questions or wish to discuss this matter further.

Francis A. Magelssen

F. A. Magelssen
Senior Environmental Engineer, P.E.
Institute C&P Operations

cc: B. R. Adler
F. L. Boggs
M. T. Chow
C. H. Hancock
J. K. Petros
R. J. Romagnoli
R. L. Suttles
File/General 111A Landban

FAM:ljc
0929

4/12
LD12-00190.C

UNION CARBIDE CORPORATION
P. O. BOX 2831, CHARLESTON, WV 25330
Institute Plant

October 31, 1988

CERTIFIED MAIL

Mr. James M. Seif
Regional Administrator
EPA Region III
841 Chestnut Street
Philadelphia, Pennsylvania 19107

Dear Mr. Seif:

Pursuant to 40 CFR Section 268.8(a)(1), this letter and attachments constitute a demonstration and certification that a hazardous waste recently generated by Union Carbide Corporation, which is otherwise prohibited under 40 CFR Section 268.33(f), has been treated by the practically available technology which yields the greatest environmental benefit prior to land disposal in a surface impoundment.

Please call Ms. Frances Magelssen on (304) 747-1965 if you have any questions or wish to discuss this matter further.

C H Hancock

C. H. Hancock
Works Manager
Institute C & P Operations

CHH/tad
Attachments
cc: B. R. Adler
F. A. Magelssen
J. K. Petros
R. J. Romagnoli

5/13
LD12-C0190.D

ATTACHMENT

First Third Land Ban Wastes Demonstration and Certification
Ethylene Oxide Washwater (U115)

INTRODUCTION

During cleanup and removal of two ethylene oxide underground storage tanks (Tanks 1000A and 1000B), 32,000 gallons of washwater containing 26.5 ppm ethylene oxide was generated. The two tanks were emptied as much as practical and purged with nitrogen prior to water washing. The washwater contaminated with ethylene oxide constitutes a hazardous waste under 40 CFR Section 261.3(b)(2) in the opinion of Union Carbide Corporation and is identified under EPA hazardous waste number U115. This hazardous waste is prohibited from land disposal under 40 CFR Section 268.33(f).

DEMONSTRATION

Union Carbide Corporation determined that practically available technology which yields the greatest environmental benefit was available on site to treat the waste. The waste was purged with nitrogen while being stored in Tanks 1000A and 1000B which constitutes an absorption operation. The ethylene oxide/nitrogen emissions were destroyed in the MDP flare (West Virginia Air Pollution Control Device Number A180). After batch treatment by nitrogen absorption, there remained a residual of less than 0.5 ppm ethylene oxide in the washwater. In the past, Union Carbide has disposed of ethylene oxide waste by either nitrogen purging to the flare or biological waste treatment which reduces emissions to 0.5 ppm ethylene oxide.

Attached are copies of the analytical results before and after absorption. The residual ethylene oxide/water mixture will be disposed of in the Rhône-Poulenc Ag Company Waste Water Treatment Unit (WWTU) which is an interim status hazardous waste treatment facility operated under EPD I.D. WVD005005509 and WV/NPDES permit WV0000086. Since the WWTU contains two surface impoundments, a waiver from the land diposal restrictions under §268.8(a) is necessary. Pursuant to the requirements of §268.8(h)(2), the surface impoundments are in compliance with Subpart F of Part 265 and §§265.221(a), (c) and (d). (Please note that the impoundments are presently operating under an aggressive biological treatment waiver. Thus, in order to meet the requirements of §265.221, the washwater must be disposed of by November 8, 1988.).

It should be noted that the Union Carbide operations at Rhone Poulenc's Institute, WV plant also operate under EPA ID WVD 005005509. Rhone Poulenc Ag Company is the plant owner operating approximately half of the industrial facilities and all environmental facilities whereas Union Carbide leases and operates approximately half of the industrial facilities at the location.

~~6/13~~
6/12

CERTIFICATION

I certify under penalty of law that the requirements of 40 CFR Part 268.8(a)(1) have been met and that I have treated my waste by the practically available technology which yields the greatest environmental benefit, as indicated in my demonstration. I believe that the information submitted is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

C. H. Hancock
Works Manager
Institute C & P Operations

Signature C H Hancock

Date 10/31/88

~~#13~~

LD12-00190. E

7/12

Sample = Wash Water / Ethylene Oxide
1000A/1000B Tank 1 pm 10/25/88

* EtOx = Not detected (at a minimum detection limit of ≈ 0.2-

Et Glycol
Di Glycol
Tri Glycol
} trace amounts - parts per million (low)

Heavier glycols = proposed to be present

Total organic carbon = 36 ppm

Diana Holley
Oct. 31, 1988

8/12

LD12-00190.F

REPORTED TO HENDERSON
3:15pm 10-11-88

STATEMENT OF Catalyst Dept. (B. Suttles
S. Henderson X1996)

				EtOx and Wastewater		Soil under 1000A+B				
1				1000A+B TKs		2pm 10-9-88				
2				2pm 10/5/88						
3	ppm Ethylene Oxide)			26.23		ND				
4				ppm						
5										
6										
7	~~ND~~			ND other						
8				organics						
9				were						
10				to be						
11				determined						
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9/12

LDR-00190.C

→ File
SMW
RCRA
Institute

UNION CARBIDE

P. O. BOX 2831, CHARLESTON, W. VA. 25330
Institute Plant

February 27, 1989

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Mr. Stanley Laskowski
Acting Regional Administrator
EPA Region III
841 Chestnut Street
Philadelphia, PA 19107

Dear Mr. Seif:

Pursuant to 40 CFR Section 268.8(a)(1), this letter and attachments constitute a demonstration and certification that a hazardous waste recently generated by Union Carbide Corporation, which is otherwise prohibited under 40 CFR Section 268.33(f), will be treated by the practically available technology which yields the greatest environmental benefit prior to land disposal in a landfill.

If you should have any questions or wish to discuss this matter further, please contact Mr. John Kim at (304) 747-1856.

Sincerely yours,

S. W. Drake
Works Manager
Institute C&P Operations

SWD/JSK/tsm
Attachments
1101R
cc: B. R. Adler
J. S. Kim
J. K. Petros
R. J. Romagnoli

10/12
LD12-00190.H

ATTACHMENT

Demonstration and Certification of
First Third Land Ban Waste
Ethylene Oxide Polymer (U115)

INTRODUCTION

During cleanup and removal of ethylene oxide storage tanks (Tanks 1401-1410, 1412, 1491, 1493, 1000A, and 1000B), 3600 pounds of solid residue contaminated with 1-10 ppm ethylene oxide, containing a mixture of sand (from sandblasting the tanks' interior) and polymer (derived from ethylene oxide) were generated. The residue, which has been placed in eighteen 55-gallon containers, constitutes a hazardous waste under 40 CFR Section 261.3(b)(2) in the opinion of Union Carbide Corporation and is identified under EPA hazardous waste number U115. This hazardous waste is also prohibited from land disposal under 40 CFR Section 268.33(f).

DEMONSTRATION

The practically available technology (PAT) which yields the greatest environmental benefit is to incinerate the residue in an approved hazardous waste commercial incinerator. As part of the demonstration, Union Carbide Corporation contacted a commercial treatment, storage, and disposal (TSD) facility to determine the best PAT to treat the residue. The name of the TSD facility, the official contacted, address, telephone number, and contact dates are shown in Exhibit 1 of this demonstration.

Information provided by this TSD facility specified that incinerating the residue would be possible and that the destruction and removal efficiency of 99.99% would be achieved for the ethylene oxide. The incinerator ash would then be disposed in an approved MTR landfill.

The residue will be contracted with this TSD facility which is currently operating under a RCRA permit (Permit #0809 D State; NJD 053288239 EPA). Pursuant to 40 CFR 268.5(h)(2), the incinerator ash will be sent to a landfill that is in compliance with 40 CRF 264 Subpart F, and 264.301(c). Since the residue incinerator ash will be landfilled, a waiver from the land disposal restrictions under 40 CRF 268.8(a) is necessary.

1101R

CERTIFICATION

I certify under penalty of law that the requirements of 40 CFR 268.8(a)(1) have been met and that I have contracted to treat my waste by the practically available technology which yields the greatest environmental benefit, as indicated in my demonstration. I believe that the information submitted is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

S. W. Drake
Works Manager
Union Carbide Corporation
Institute C&P Operations

Signature S W Drake

Date 2/27/89

1101R

EXHIBIT #1

Commercial TSD Facilities Contacted

- Facility Name: Rollins Environmental Services

  Facility Address: Route 322
  Bridgeport, New Jersey 08014

  Facility Personnel Contacted: Mike Fusco

  Telephone Number: (609) 467-3105

  Contact Dates: 11/28/88 (letter) 1/26/89 (response)

Comment Number: 52-B-3

Docket Number: LD12 - 00190

Commenter: Union Carbide Chemicals and Plastics Company Inc.

Issue: Gases

Subissue: Numerical Standards for Gas Wastes in Nongaseous Forms

Response:

This comment is a data set, submitted to EPA prior to the comment period, which characterizes the treatment of U115 (ethylene oxide) by incineration. The commenter believes that establishing recovery as the only acceptable treatment method for gaseous U and P wastes, such as U115, is inappropriate because of the possibility that the waste will be generated as a nonwastewater or a wastewater. The commenter urges EPA to promulgate concentration-based BDAT treatment standards for U115 nonwastewaters and wastewaters, instead of methods of treatment.

EPA agrees with the commenter that, due to the possible generation of nonwastewater and wastewater forms of U115, such as spill residues and tank wash water, recovery is inappropriate as the only acceptable treatment method for gaseous U and P wastes. Promulgated BDAT treatment standards as methods of treatment for U115 are being revised to chemical oxidation or thermal oxidation (incineration) for nonwastewaters, and thermal oxidation (incineration), chemical oxidation followed by carbon adsorption, or wet air oxidation followed by carbon adsorption for wastewaters. The development of these treatment standards is discussed in Volume E of the U & P Wastes and Multi-Source Leachates background document. Due to the variable nature of these wastes, and because EPA has very little characterization and treatability data on these wastes, methods of treatment are being promulgated as BDAT treatment standards instead of concentration-based standards.

The promulgation of BDAT treatment standards as methods of treatment, however, does not preclude a facility from utilizing recovery (recycle or reuse) operations in accordance with 40 CFR 261.

Comment Number: 52-C-1

Docket Number: LDI2-00047

Commenter: HOECHST CELANESE CORPORATION

Issue: Gases

Subissue: Treatment Methods for Wastewater Contaminated with Ethylene Oxide

Comment:

Introduction

Hoechst Celanese Corporation is submitting these comments to provide EPA with new information regarding the underground injection of Ethylene Oxide (U-115). Hoechst Celanese is also requesting a two-year capacity variance for the underground injection of Ethylene Oxide at the Hoechst Celanese Chemical Group, Inc., Clear Lake Plant.

Comments

1. Ethylene Oxide (U-115) is a waste which is currently underground injected.

Table III.B.2(a), on page 48486 of the proposed rule, lists wastes which EPA believes are not underground injected. Ethylene Oxide (U-115) waste is listed in Table III.B.2(a). Hoechst Celanese wishes to inform EPA that the U listed waste (U-115) Ethylene Oxide is currently injected in the Hoechst Celanese Chemical Group, Inc., Clear Lake Plant underground injection wells.

Hoechst Celanese Chemical Group, Inc. operates an Ethylene Oxide production facility at the Clear Lake Plant. Because of the extreme fire/explosion potential of Ethylene Oxide, the Clear Lake Plant had to develop a method of handling Ethylene Oxide should the material become unstable during production, storage and/or loading operations. Hoechst Celanese researched several methods of handling large quantities of Ethylene Oxide in the event there occurred a threat of a fire or an explosion. The method chosen was to rapidly dilute the Ethylene Oxide in a large quantity of water in a remote area of the plant. This procedure allows the plant, in an emergency situation, to rapidly remove the Ethylene Oxide from the operations area and significantly reduce the fire and explosion potential.

To provide adequate dilution capacity, a 4,000,000 gallon pond of water (fire water and cooling tower blowdown) is maintained on site. This "emergency dump" pond is sufficient for the emergency dumping of the largest volume of Ethylene Oxide stored at the plant. Should an unstable situation occur, the Ethylene Oxide can be rapidly flushed with large quantities of fire water, routed to the emergency dump pond and dispersed throughout the pond via a sparger system.

Since the use of the Ethylene Oxide emergency dump pond is an essential part of safe production, storage, and loading of this material, Hoechst Celanese applied for a variance from the minimum

cont.

Comment Number: 52-C-1

Docket Number: LA12-00047

Commenter: HOECHST CELANESE CORPORATION (continued)

Issue: Gases

Subissue: Treatment Methods for Wastewater Contaminated With Ethylene Oxide

Comment:

technology requirements for the Ethylene Oxide emergency dump pond. As a condition of this variance, the Clear Lake Plant must flush the Ethylene Oxide contaminated wastewater from the emergency dump pond within seven days until the remaining water contains no more that 1.0 ppm Ethylene Oxide. The contaminated wastewater removed from the pond during this flushing process is disposed of via onsite underground injection wells. Therefore, contrary to the listing in Table III.B.2(a), Ethylene Oxide (U-115) is currently being disposed of via underground injection.

2. Underground Injection is the only feasible method of disposing of the waste stream.

Off-site disposal of the Ethylene Oxide contaminated wastewater is not possible. The generation of this waste stream is infrequent and unpredictable. Depending on the amount of flushing required to meet the 1.0 ppm Ethylene concentration level, between 4,000,000 and 8,000,000 gallons of wastewater is generated. To transfer this material to an off-site disposal facility would require twenty-eight to fifty-six railroad tank cars per day or 112 to 224 tank trucks per day for the seven days allowed to remove the wastewater from the emergency dump pond. This translates into 196 to 392 total tank cars or 784 to 1568 tank trucks. Since this situation develops as an emergency, no advance preparation can be made to have this number of tank cars or tank trucks available. Even if arrangements could be made to find this number of transport vehicles, the Clear Lake Plant could not handle loading these in a safe, environmentally sound manner. Additionally, without substantial advanced notice, no off-site facility could handle the waste in the time required.

Cont.

Comment Number: 52-C-1

Docket Number: LD12-00047

Commenter: HOECHST CELANESE CORPORATION

Issue: Gases

Subissue: Treatment Methods for Wastewater Contaminated

Comment: with Ethylene Oxide

3. Hoechst Celanese requests that EPA grant a two-year capacity variance for the underground injection of Ethylene Oxide.

As described above, the use of the emergency dump pond is essential to the safe operation of the Clear Lake Plant. The emergency use has only been required three times in the last five years as a result of power failures and/or hurricanes. The off-site transfer of the contaminated wastewater would not be possible and an offsite disposal facility could not accept this quantity of waste without significant advanced notice.

Hoechst Celanese has prepared a no migration petition for the continued use of the Clear Lake Plant injection well system. The petition is in final stages of approval by the Texas Water Commission and will soon be forwarded to the EPA for their review. Hoechst Celanese anticipates that the petition will be approved by May 8, 1990. Approval of the no migration petition by May 8, 1990 will eliminate the concern for available on-site disposal of the Ethylene Oxide contaminated in the Clear Lake Plant deep well injection system.

If the no migration petition is not approved by May 8, 1990, Hoechst Celanese would have no mechanism to ensure the safe operation of the facility while maintaining compliance with the variance from minimum technology requirements granted by EPA. To ensure that this situation does not occur and because off-site disposal is not possible, Hoechst Celanese requests that EPA grant a two-year capacity variance for the onsite underground injection of Ethylene Oxide at the Clear Lake Plant.

Comment Number: 52-C-1

Docket Number: LD12 - 00047

Commenter: Hoechst Celanese Corporation

Issue: Gases

Subissue: Treatment Methods for Wastewater Contaminated with Ethylene Oxide

Response:

The commenter is informing EPA that it currently injects U115 (ethylene oxide) wastewater into underground injection wells. This wastewater is generated from emergency dilution of U115 whenever the ethylene oxide becomes unstable during production, storage and/or loading operations. In addition, the commenter requests a two year variance due to lack of capacity.

Promulgated BDAT treatment standards for U115 are being revised to chemical oxidation or thermal oxidation (incineration) for nonwastewaters, and thermal oxidation, chemical oxidation followed by carbon adsorption, or wet air oxidation followed by carbon adsorption for wastewaters. Deep-well injection is no longer acceptable for U115 disposal. The development of these treatment standards is discussed in Volume E of the U & P Wastes and Multi-Source Leachates background document.

The promulgation of BDAT treatment standards as methods of treatment, however, does not preclude a facility from utilizing recovery (recycle or reuse) operations in accordance with 40 CFR 261.

Note: Capacity variance issues are being addressed in Section 1 of the comment document.

Comment Number: 52-D-1

Docket Number: LD12-00206

Commenter: University of Washington

Issue: Gases

Subissue: Treatment Methods for U115 Nonwastewaters

Comment:

Treatment standard for U115. Ethylene oxide (U115) is sometimes generated in a form which is not recoverable due to contamination or degradation. For example, ethylene oxide can be purchased in glass ampules. The ethylene oxide is prone to polymerize over time, rendering an unusable product. Ethylene oxide is clearly amenable to incineration and should have a treatment standard of "incineration as a method of treatment".

Comment Number: 52-D-1

Docket Number: LD12 - 00206

Commenter: University of Washington

Issue: Gases

Subissue: Treatment Methods for U115 Nonwastewaters

Response:

The commenter believes that establishing recovery as the only acceptable treatment method for gaseous U and P wastes, such as U115, is inappropriate because of the possibility that the waste will be generated in a nonrecoverable form. The commenter urges EPA to promulgate technology-based BDAT treatment standards for U115 nonwastewaters and wastewaters, based on incineration.

EPA agrees with the commenter that, due to the possible generation of nonwastewater and wastewater forms of U115, such as spill residues and tank wash water, recovery is inappropriate as the only acceptable treatment method for gaseous U and P wastes. Promulgated BDAT treatment standards for U115 are being revised to chemical oxidation or thermal oxidation (incineration) for nonwastewaters, and thermal oxidation, chemical oxidation followed by carbon adsorption, or wet air oxidation followed by carbon adsorption for wastewaters. The development of these treatment standards is discussed in Volume E of the U & P Wastes and Multi-Source Leachates background document.

Additionally, the promulgation of BDAT treatment standards as methods of treatment does not preclude a facility from utilizing recovery (recycle or reuse) operations in accordance with 40 CFR 261.

Comment Number: 52-D-2

Docket Number: LD12-L0007

Commenter: Chemical Manufacturers Association

Issue: Gases

Subissue: Treatment Methods for U115 Nonwastewaters

Comment:

X.- EPA Has Designated "Recovery" as a Treatment Method for Compressed Gases, and Has Not Considered Combustion as an Alternate, Acceptable Technology.

Recovery is proposed as a method of treatment for U155, P076, and P078 compressed gases. 54 Fed. Reg. at 48,459. Recovering "U" and "P" material should not be regulated as treatment, since this is legitimate recycling under 40 C.F.R. § 261.33.

U115 is combustible. Combustion, either as a fuel substitute or in an incinerator, should be a permissible means of treatment. Although U115 is combustible, BDAT defined as "recovery" for the U115 wastes is more specific than for D001 ignitable compressed gases as proposed at 40 C.F.R. § 261.21(a)(3), and therefore will take precedence.

Recovery is not always possible, particularly for small quantities and low pressure "heels" in compressed gas cylinders. Also, EPA has already acknowledged that materials containing U115 have been incinerated and chemically oxidized to concentrations below detection levels. 54 Fed. Reg. at 48,459. Therefore, EPA should change the proposed standard for U115 to allow for oxidation or combustion in either an incinerator or as a fuel substitute.

Comment Number: 52-D-2

Docket Number: LD12 - L0007

Commenter: Chemical Manufacturers Association

Issue: Gases

Subissue: Treatment Methods for U115 Nonwastewaters

Response:

The commenter believes that establishing recovery as the only acceptable treatment method for gaseous U and P wastes, such as U115 (Ethylene oxide), is inappropriate because of the possibility that the waste will be generated and recovery may not be possible. The commenter urges EPA to promulgate technology-based BDAT treatment standards for U115 nonwastewaters and wastewaters, based on incineration and fuel substitution.

EPA agrees with the commenter that, due to the possible generation of nonwastewater and wastewater forms of U115, such as spill residues and tank wash water, recovery is inappropriate as the only acceptable treatment method for gaseous U and P wastes. Promulgated BDAT treatment standards for U115 are being revised to chemical oxidation or thermal oxidation (incineration) for nonwastewaters, and thermal oxidation (incineration), chemical oxidation followed by carbon adsorption, or wet air oxidation followed by carbon adsorption for wastewaters. The development of these treatment standards is discussed in Volume E of the U & P Wastes and Multi-Source Leachates background document.

EPA is not promulgating fuel substitution as a technology-based BDAT treatment standard option for U115 nonwastewaters, even though U115 contains only carbon, hydrogen, and oxygen, because U115 is never expected to be in a form amenable to fuel substitution. The Agency believes that the nonwastewater forms of U115 will be damaged gas cylinders and contaminated spill material, such as soil.

Additionally, the promulgation of BDAT treatment standards as methods of treatment does not preclude a facility from utilizing recovery (recycle or reuse) operations in accordance with 40 CFR 261.